NAEP's Digital Transition and Innovative Assessments

Ashley McGrath

February 8–9, 2018

Billings, MT

Session Objectives

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Summarize

Summarize the NAEP 2017 transition to digital & results

Inform

Inform attendees of the digital transition NAEP plan & future assessments

Share

Share resources from the TEL released sample tasks

What is NAEP?

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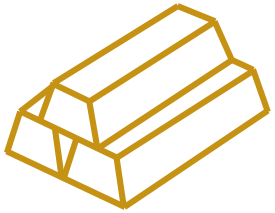
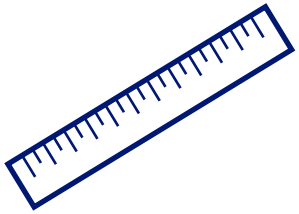
The gold standard



"NAEP is often called the "gold standard" in assessment, as it is developed by renowned assessment and content specialists, education experts, and teachers from around the nation."

A common yardstick



"NAEP provides a common measure of student achievement across the country. State assessments vary, preventing direct comparisons across states. NAEP, on the other hand, administers the same assessment in every state, allowing for valid and meaningful cross-state comparisons."

What is NAEP?

Video Link 2:25 mins

Subjects Assessed in NAEP

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The Arts

Civics

Economics

Geography

Mathematics

Reading

Science

Technology and Engineering Literacy

U.S. History

Writing

NAEP Schedule of Assessments

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- https://www.nagb.gov/about-naep/assessment-schedule.html

Year	Subject	National Grades Assessed	State Grades Assessed	TUDA Grades Assessed
2024	Arts	8		
	Foreign Language	12		
	Long-term Trend	~		
2023	Reading	4, 8, 12	4, 8	4, 8
	Mathematics	4, 8, 12	4, 8	4, 8
	Science	4, 8, 12	4, 8	4, 8
	High School Transcript Study			
2022	U.S. History	8, 12		
	Civics	8, 12		
	Geography	8, 12		
	Economics	12		
	Technology and Engineering Literacy	8, 12		
2021	Reading	4, 8	4, 8	4, 8
	Mathematics	4, 8	4, 8	4, 8
	Writing	4, 8, 12	8	
2019	Reading	4, 8, 12	4, 8	4, 8
	Mathematics	4, 8, 12	4, 8	4, 8
	Science	4, 8, 12		
	High School Transcript Study			
2018	U.S. History	8		
	Civics	8		
	Geography	8		
	Technology and Engineering Literacy	8		

NAEP 2018 PROGRAM

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NAEP Staff	Subject	Grade	Digitally Based	Paper and Pencil
Operational Staff	Civics, Geography, and US History	8	✓ Tablets	✓
TEL Operational Staff	Technology and Engineering Literacy (TEL)	8	✓ Laptops	
Pilots and Special Studies Staff	Reading Pilot	12	✓	
	Math Pilot	12	✓	
	Science Pilot ICTs and HOTs	4/8/12	✓	
	Oral Reading Fluency (ORF) Study	4	✓	
	Reading Scenario-Based Tasks Study	4/8/12	✓	

NAEP Road Map

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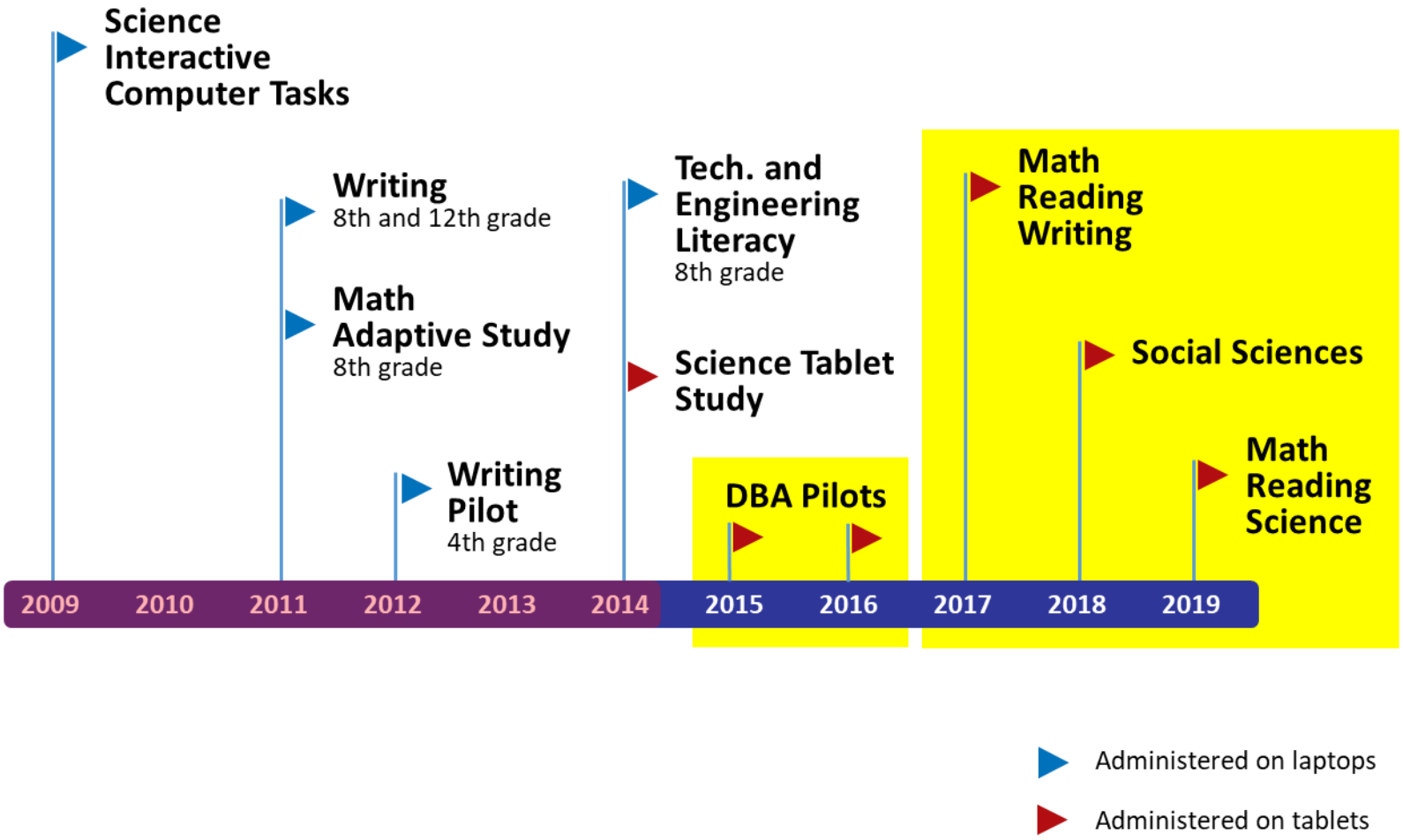

NAEP Digital Transition Goals

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- Two competing goals:

Maintain Meaningful Trends	Maintain NAEP's Relevance
• Continue to report on changes in performance over time • Trend lines are valuable to stakeholders • Important monitoring role	• Indicator of what students know and can do in a digital world • Use affordances of technology to more fully measure subject frameworks

Balancing Act

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Step 1

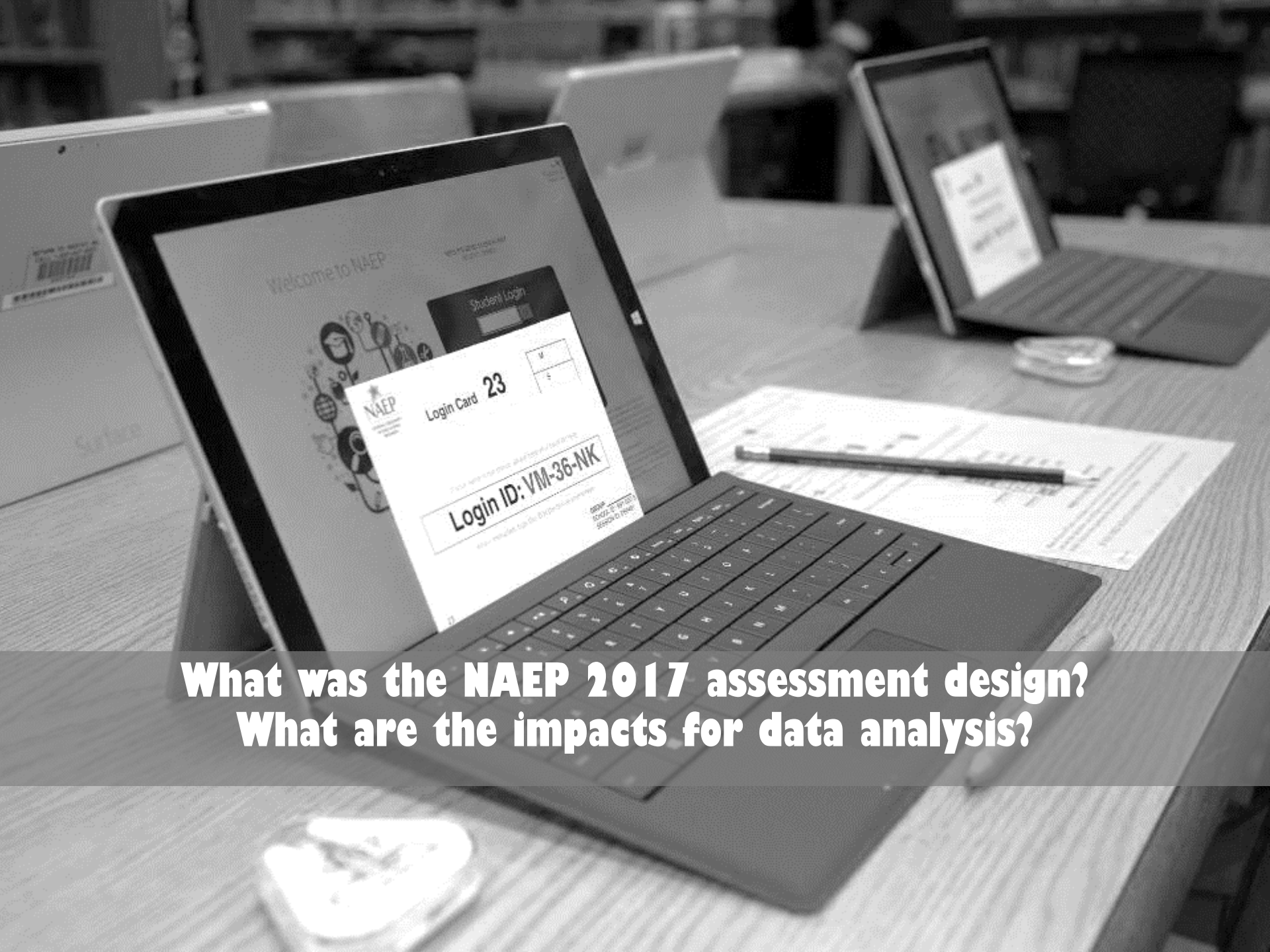
From a Paper Based to a Digitally Based Assessment

- Bring forward the existing "legacy" paper-and-pencil items for DBA use
- Study the effect of changing the mode
- **Supports trend goal**

Step 2

To an Assessment *Designed and Developed* for Digital Delivery

- Develop new items, tasks, and item types to leverage the affordances of the digital platform
- Study the effect of introducing new content
- **Supports relevance goal**



What was the NAEP 2017 assessment design? What are the impacts for data analysis?

NAEP 2017 School Student Samples: Mathematics and Reading at Grades 4 and 8

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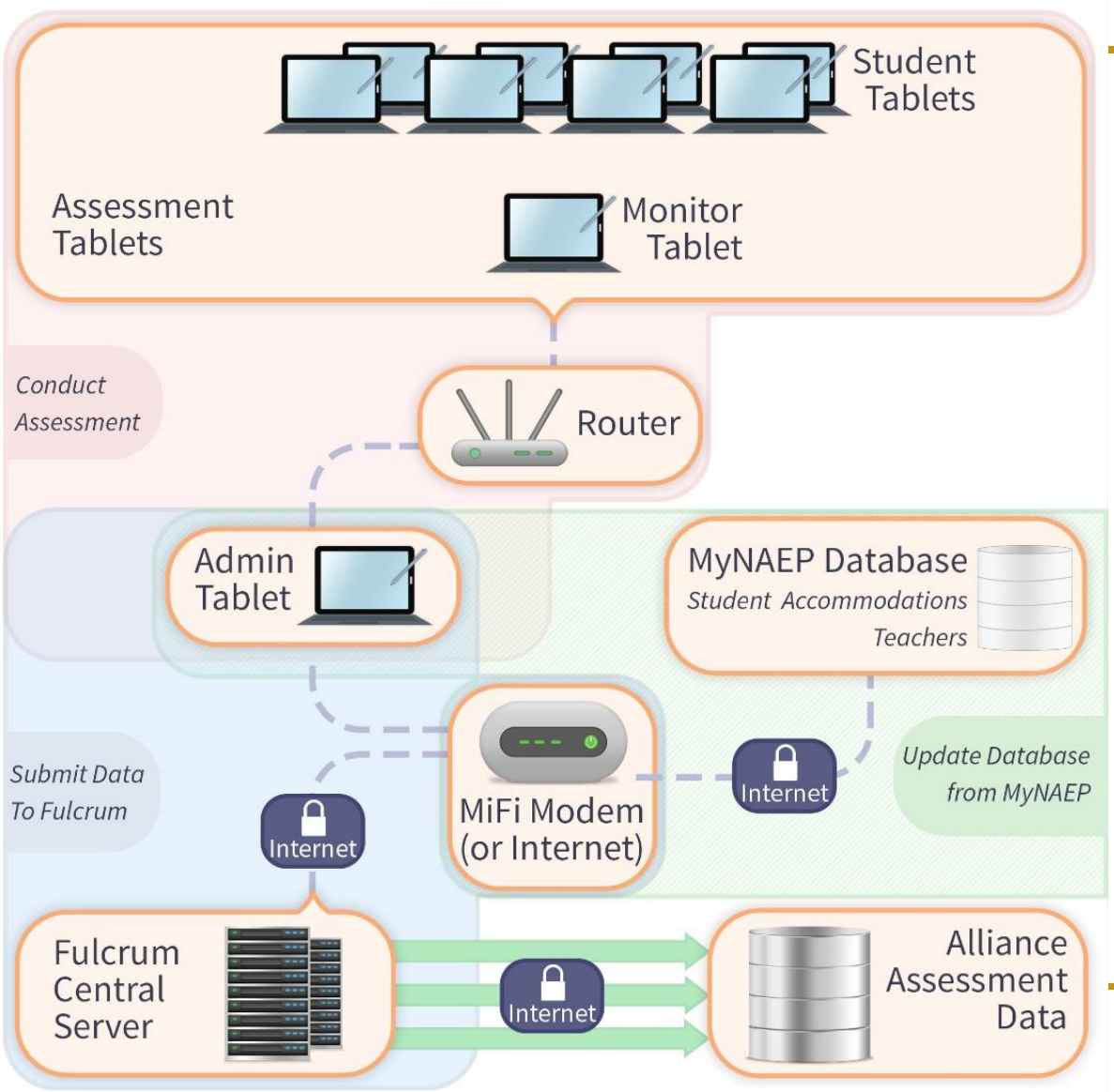
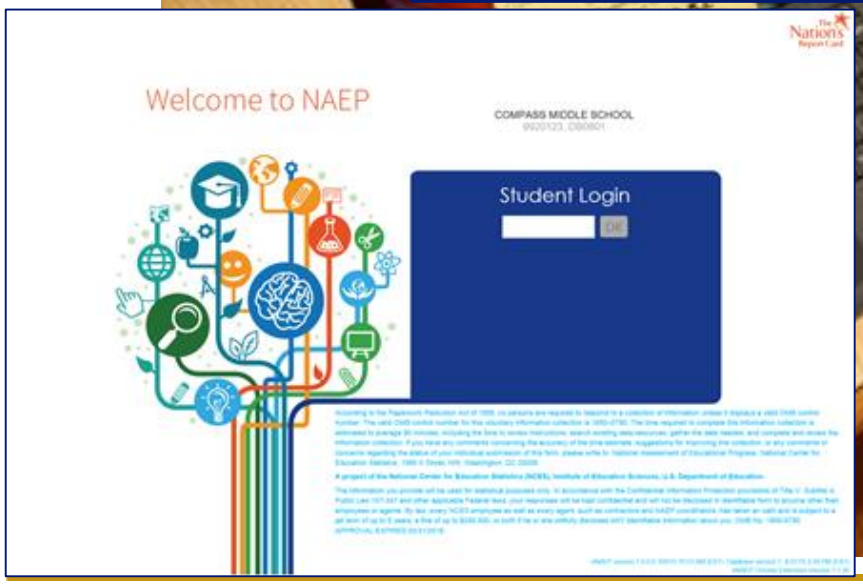
- Some students take DBA and others take PBA *in the same school*
  - 80% DBA and 20% PBA
  - 50 DBA and 12 PBA students to total 62 target sample size (TSS)
  - Small schools (<21) will have PBA or DBA

NAEP Technology



Getting started…



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Login Card **56** S

Kit G,-

LUCAS SCIENCE MAGNET SCHOOL

Samantha Skywalker

If your name is not shown, please raise your hand for help.

Login ID: BG-56-ZZ

When instructed, type this ID in the box on your screen.

56

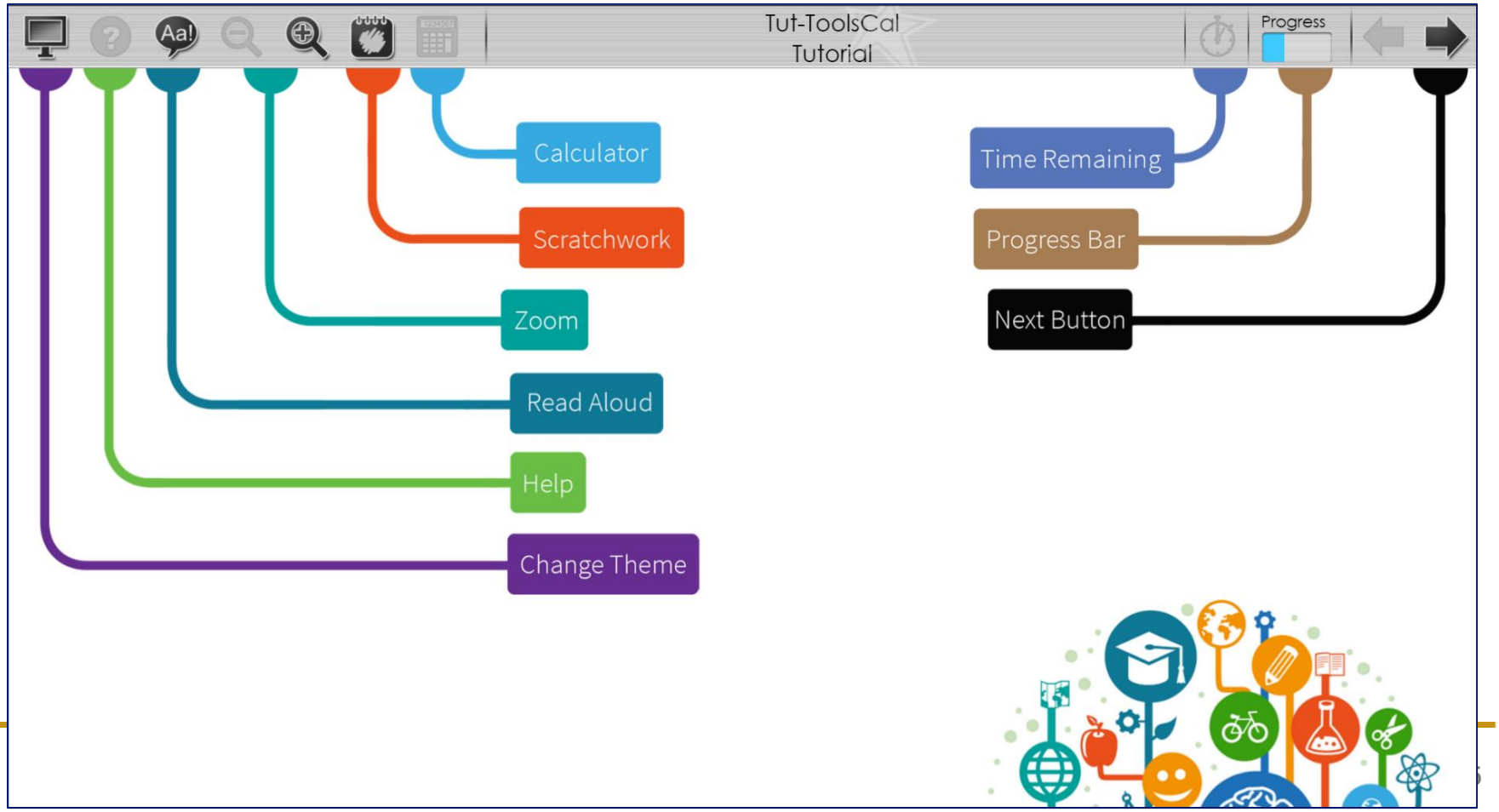
GROUP _____

SCHOOL ID: 1921442

SESSION ID: TB0801

Tutorials

- Tutorial—up to 10 minutes. Timing varies according to subject



Experience an Assessment

- https://enaep-public.naepims.org/2018/Tutorial_Intro_Webpage/index.html

Student Perspective

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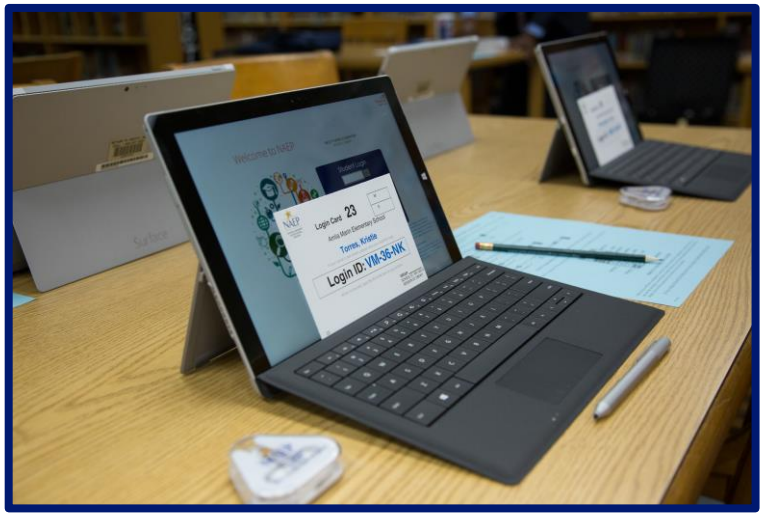
- Enhanced student interaction in a DBA environment
  - Dynamic item types and student response options
- Students able to tailor their experiences to their own preferences
  - Stylus or touch screen
  - Theming
  - Universal design features



"[The tablets] made it so easy to take the test."

Going Digital: NAEP Assessments for the Future

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Did You Know …

- Also known as *The Nation's Report Card* is going digital
- NAEP 2017 biennial state mathematics and reading at grades 4 and 8 was given both via tablets and paper
- Spring of 2018 | anticipate results from this vital state-level data collection which provides Montana with information on how our students perform compared to other jurisdictions

Why is there a delay?

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EDUCATION WEEK

Digital Transition Delays NAEP Reading, Math Results Until Spring

"The culprit seems to be the wrinkles caused by transitioning NAEP from a paper-and-pencil exam to one that's given on tablets or digital devices…It turns out that administering tests in different formats can alter the construct, or what's being measured, in not-insignificant ways."

Stephen Sawchuck, *Education Week*, Oct. 24, 2017

Going Digital: NAEP Assessments for the Future

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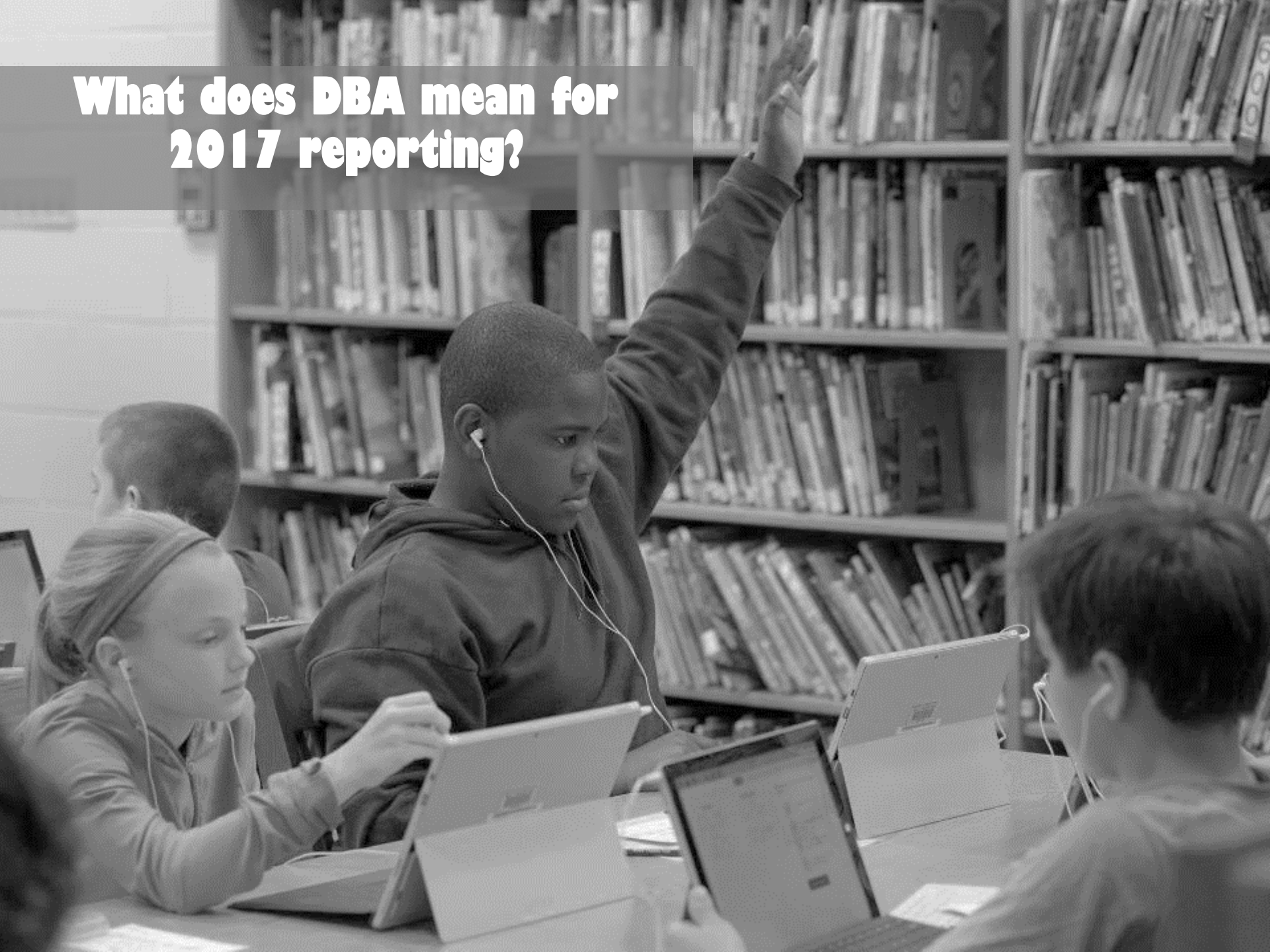
- Going Digital: NAEP Assessments for the Future (1:51 mins)

What does DBA mean for 2017 reporting?



The Nation's Report Card

REPORTS | DASHBOARD | DATA TOOLS | NEWS ROOM | FOCUS ON NAEP | SAMPLE QUESTIONS

HOW DID U.S. STUDENTS PERFORM ON THE MOST RECENT ASSESSMENTS?

SHARE

Select a **JURISDICTION** and a **RESULT** to see how students performed on the latest NAEP assessments.
Click on the ▼ to see the most recent reports in each subject.

SELECT JURISDICTION: Public and nonpublic schools

SELECT RESULT: At or above *Proficient*

	PERCENTAGE OF STUDENTS AT OR ABOVE *Proficient*		
	Grade 4	Grade 8	Grade 12
ARTS: MUSIC	—	—	—
ARTS: VISUAL ARTS	—	—	—
CIVICS	27	23	24
ECONOMICS	—	—	42

The Nation's Report Card is the largest ongoing assessment of what U.S. students know and can do.

NAEP Is Transitioning to Digitally Based Assessments

Explore NAEP's Transition to Digitally Based Assessments (DBA)

NAEP's Transition to DBA

- NCES commissioner Dr. Peggy Carr discusses NAEP's transition to digitally based assessments.
- Frequently Asked Questions about NAEP's transition to DBA.
- National Assessment Governing Board statement on NAEP's move to a digital platform.

GOING DIGITAL: THE FUTURE

Go to: https://www.nationsreportcard.gov/

More Data in Report Cards

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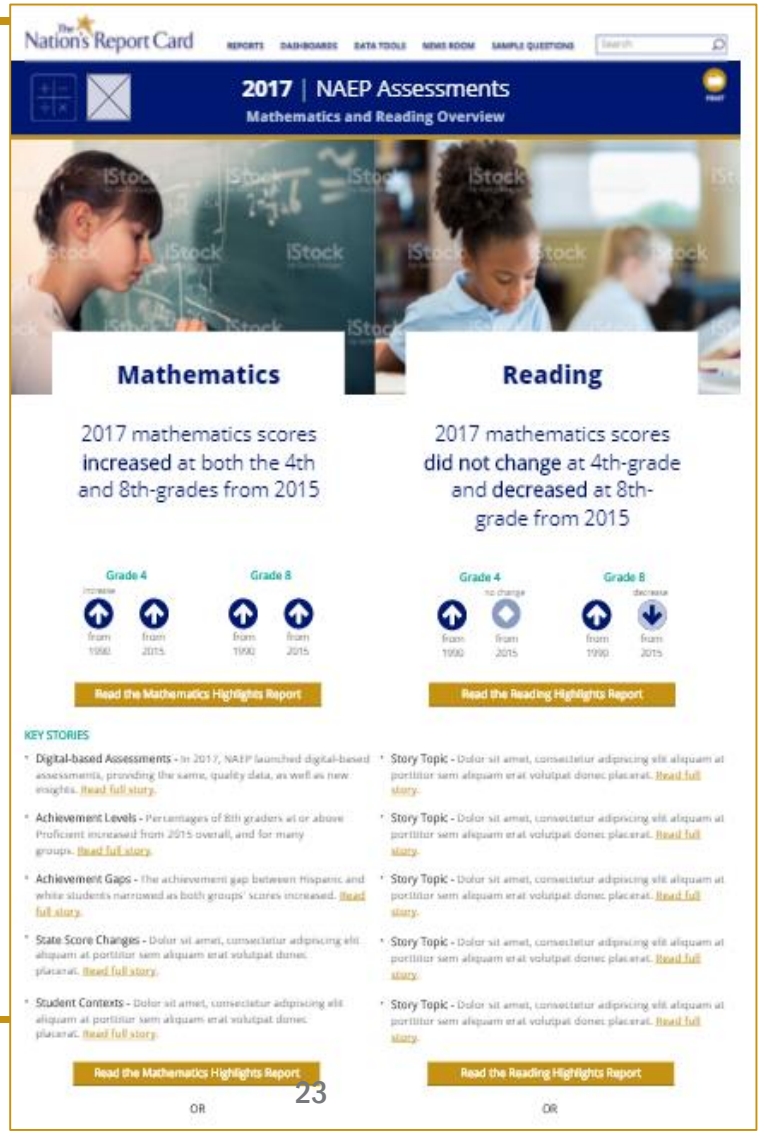
- Creating a "highlights" page to clarify top stories

- Make more accessible for policy makers and general public



TEL in 2018

Technology and Engineering Literacy

What is the TEL Assessment?

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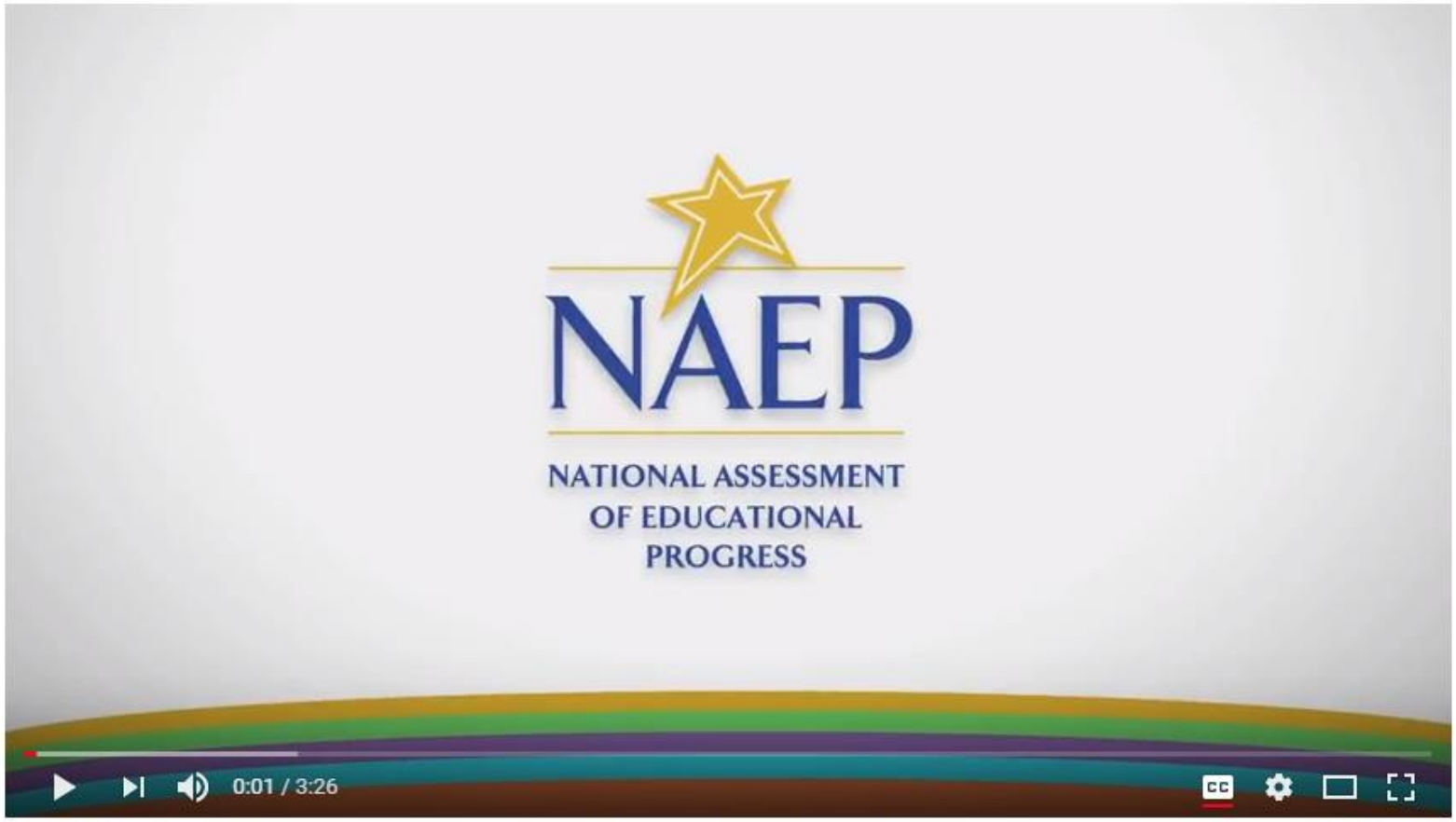
- https://youtu.be/eziz0f_d2ZM (3:26 mins)



TEL Content

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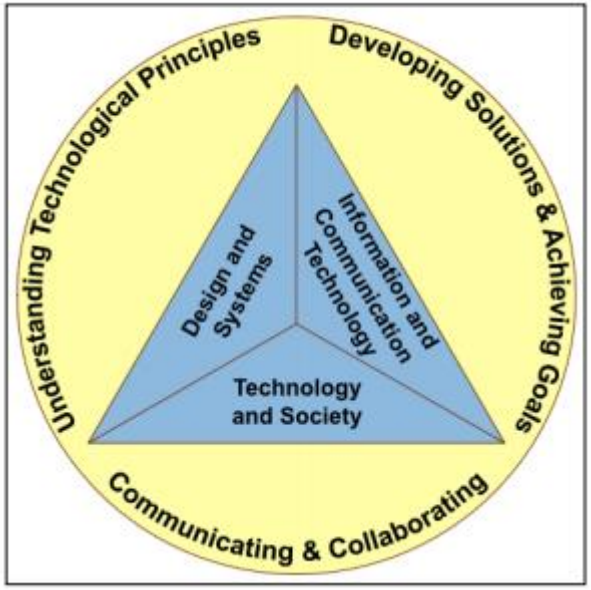

- **Technology & Society:** effects that tech. has on society and environment as well as the ethical questions raised by those effects
- **Design & Systems**: nature of tech and the processes used to develop technologies as well as basic principals for dealing with everyday tech.
- **Information/Communication Technology**: software & systems used to access, create and communicate information

TEL Practices

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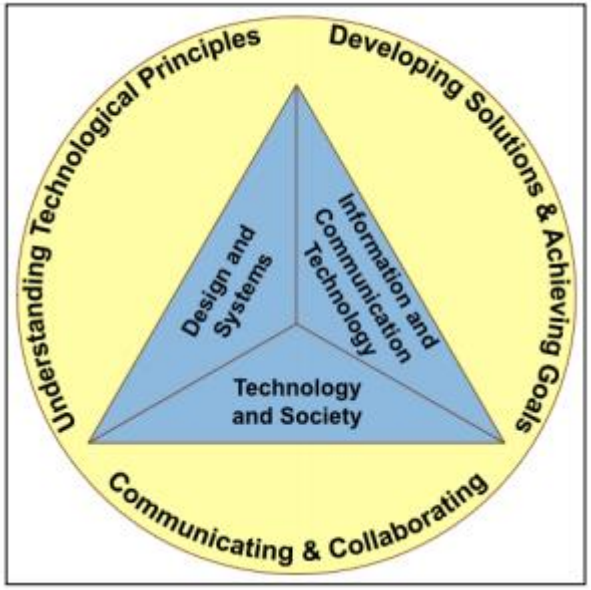

- **Understanding Technological Principals:** students are able to use their knowledge about tech.
- **Developing Solutions & Achieving Goals:** students' systematic use of technological knowledge/tools/skills to solve problems—achieve goals
- **Communicating & Collaborating:** students use contemporary tech. to communicate for a variety of purpose and variety of ways

Assessment Overview

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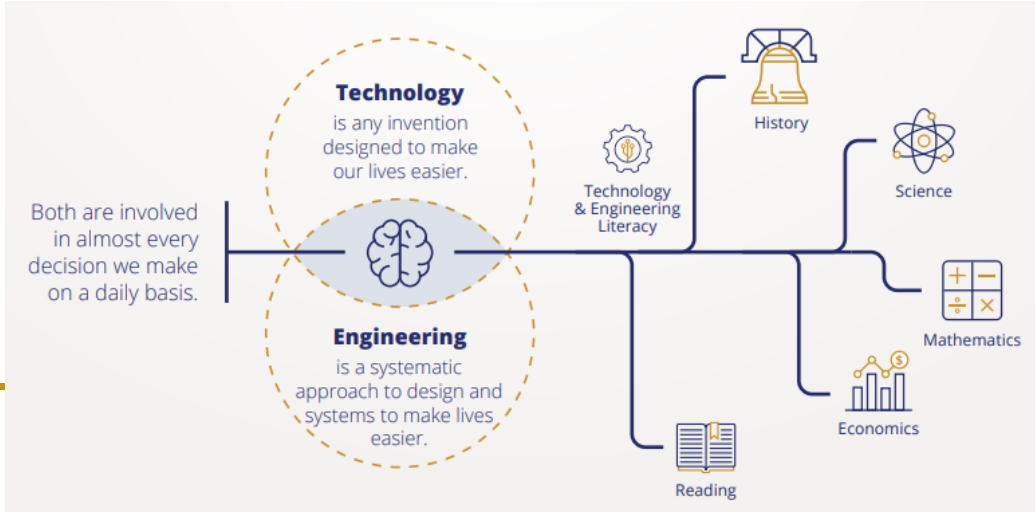
- **Overall Assessment:** 70-90 minutes
- **Content:** Two 30-minutes sections (task/questions)
- **Section:**
  - 30 minute task (long)
  - three 10 minute sets of discrete questions
  - Combination of short task (10 or 20 minutes) & discrete question set
- **Survey:** opportunities to learn about technology and engineering in/out of school



Overall results from 2014

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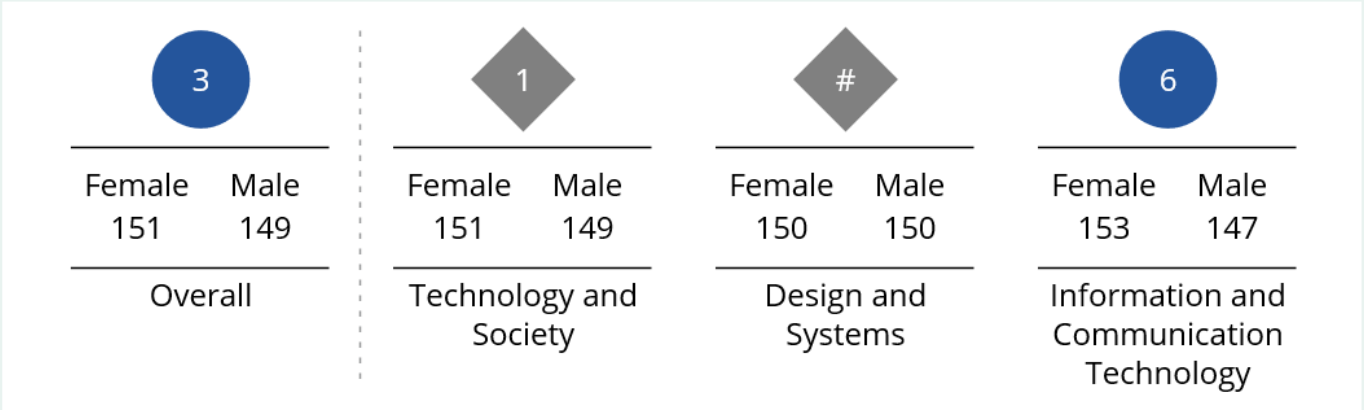
VIEW RESULTS BY: TEL content areas TEL practices

Average scores and score differences for eighth-grade students assessed in NAEP technology and engineering literacy (TEL), by gender and TEL content areas: 2014



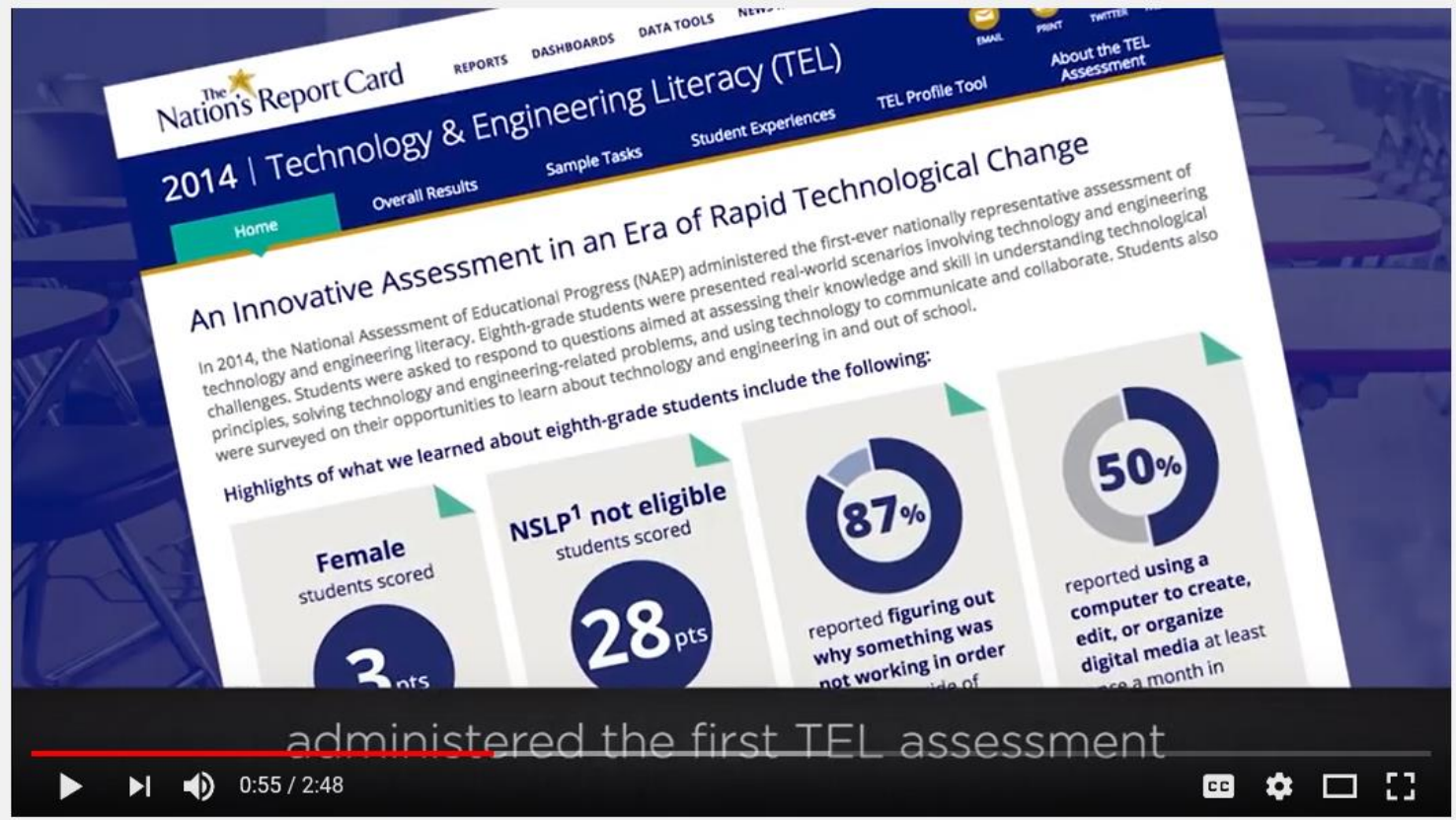
Statistically significant

Not statistically significant

Rounds to zero.
NOTE: Score differences are calculated based on the difference between unrounded average scores.

What information does TEL produce?

- https://youtu.be/NaI1LJAxoSE (2:48 mins)



Iggy the Iguana

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Evaluate and explain how to fix the habitat of a classroom iguana.

In the *Iguana Home* task, students help troubleshoot and fix the habitat for a classroom iguana named "Iggy." Students first learn about iguanas and their basic needs, and then they work through the task to determine how best to fix Iggy's wire mesh cage.

CONTENT AREA: Design and Systems
PRACTICE: Developing Solutions and Achieving Goals
TASK TIME: 30 minutes

Learn about content areas and practices

EXPLORE TASK DETAILS BY SELECTING A STEP BELOW
or take this task to experience what students did

SELECTED FINDINGS FROM THIS SAMPLE TASK:

Students were able to identify design problems and predict the outcomes of design decisions but were less able to explain how a design change could solve a problem.

67% of students were able to analyze and identify a design problem.

8% of students successfully explained how a set of design changes could solve a problem.

69% of students were able to recognize requirements and critique a proposed design solution.

- https://www.nationsreportcard.gov/tel_2014/

NAEP Technology & Engineering Literacy (TEL) 2014

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- Student Impressions of TEL https://youtu.be/Nd_NoG1Ppf0 (2:22 mins)

PAO Formative Resource

NAEP Technology and Engineering Literacy Task: Iguana Habitat

- There are 10 questions in this 30 minute investigation.
- Content Area: Design and Systems
- Practice: Developing Solutions and Achieving Goals

1. Go to "NAEP Technology and Engineering Literacy Task: Iguana Habitat".
2. Select "Take this Task" to experience what students did. Work through this scenario-based task as if you were a student. For each question, record its alignment to the Next Generation Science Standards (NGSS). In addition, please make notes of any screen capture discrepancies, text errors, or unclear instructions so these documents can be updated for future dissemination.
3. Select "Play" and "Begin".

In the Iguana Home task, students help troubleshoot and fix the habitat for a classroom iguana named "Iggy." Students first learn about iguanas and their basic needs, and then they work through the task to determine how best to fix Iggy's wire mesh cage.

Step 1- Evaluating the Cage Design to Solve Problem 1. Students consider design solutions and make predictions for solving the problem of Iggy's cage being too cold.

Step 2 – Evaluation the Cage Design to Solve Problem 2.
Students consider design solutions and make predictions for solving the problem of Iggy being awake and active at night.

Step 3 – Testing the Case Design and Evaluating Alternative Solutions. Students observe Iggy's behavior to determine whether the proposed cage design solutions solve Iggy's problems.

Step 4- Redesigning the Cage to Prevent Dehydrations. Students select a cage redesign to prevent dehydration.

Read the information on each screen. Select "NEXT" when you have finished reading the information on the screen. Screen shots of each screen are on this worksheet.

Select "NEXT" when you have finished reading the information on the screen.

PAO Instruction
Process • Assessment • Outcome

Montana Formative Science Resource

Contributed By: Monica Tomayer, Lily Haines, Melissa Johnson, and Ashley McGrath

Activity Title

Collaborative POE Strategy using the *Iggy the Iguana* Online Simulation to Meet Multiple Middle School Life Science Performance Expectations

Resource or Activity Type

Activity

Phenomenon Type

Investigative Phenomena

Activity Abstract

This type of formative strategy is best used as a collaborative Predict-Observe-Explain (POE) strategy. At this grade-level, there is flexibility to use this activity to introduce concepts, use during the course of study, and to use after the concepts have already been learned. This strategy will help students by the end of Grade 8 to build their understanding and answer the driving question, "how do organisms interact in the physical environment to obtain matter and energy?" It will also help students with their understanding that ecosystems are dynamic in nature and disruptions to physical or biological components of an ecosystem can lead to shifts that can impact living organisms. These are important middle school concepts because ecosystems are ever changing due to the interdependence of organisms of the same or different species and the nonliving (physical) elements of the environment (A Framework for K-12 Science Education, 151–152). By having students collaboratively engage in the POE strategy, this activity will help them demonstrate their understanding with several middle school life science "Ecosystems: Interactions, Energy, and Dynamics" performance expectations as well as "Engineering Design" expectations and reinforce concepts from "Molecules to Organisms: Structures and Processes." This activity is largely student-centered and touches on each aspect of the formative assessment process (i.e., clarifying intended learning, eliciting evidence, interpreting evidence, and acting on evidence).

Formative Strategy Vision

This type of formative strategy is a collaborative POE strategy using a guided case study. There are many ways to implement this strategy with your students, but, with this one example, we suggest using the free, aligned, readily available, online NAEP Technology and Engineering (TEL) simulation with embedded life science content. With the addition of the simulation case study to the POE strategy, students are able to apply their knowledge to the design and ecosystem challenges that Iggy the Iguana faces. This suggested type of scenario and organism dynamic helps students solve real design problems and use their scientific reasoning to explain the phenomena while working collaboratively with their peers.

Explore more TEL resources!

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TEL 101

Learn how TEL fits into the assessment spectrum

(PDF - 187K)

Student Experiences

Find out how students get TEL experience

(PDF - 158K)

Sample Task

Explore an example of how TEL knowledge is assessed

(PDF - 173K)

Science 2009
Interactive Computer Tasks (ICTS)

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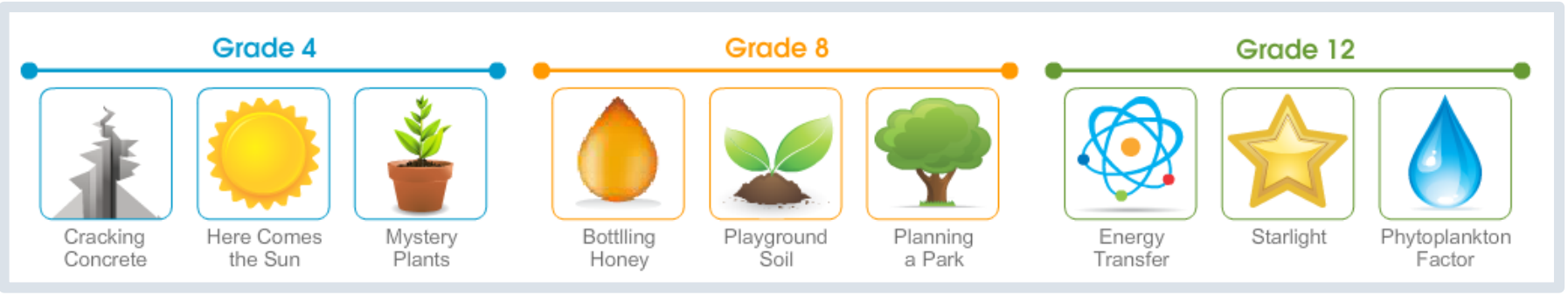
http://www.nationsreportcard.gov/science_2009/

Dig Deeper into these ICTs:

- Given at Grades 4, 8 and 12
- Asked 3 problem-solving scenarios
- One 40-minute task
- Two 20-minute task
- Hands-On-Tasks (HOTs) also available for your viewing pleasure!



Questions?

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